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Network OS

Documentation Updates

Supporting Network OS v2.1.x

BROCADE

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Document History

Title	Publication number	Summary of changes	Date
<i>Network OS Documentation Update</i>	53-1002606-01	New document	April 2012
<i>Network OS Documentation Update</i>	53-1002606-02	Added information for Network OS v2.1.1b	June 2012
<i>Network OS Documentation Update</i>	53-1002606-03	Updated qos flowcontrol command	July 2012
<i>Network OS Documentation Update</i>	53-1002606-04	Updated qos flowcontrol command	July 2012
<i>Network OS Documentation Update</i>	53-1002606-05	Added information for Network OS v2.1.2	November 2012
<i>Network OS Documentation Update</i>	53-1002606-06	updated description for "chassis fan airflow-direction" command	January 2013

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How this document is organized

This document contains updates to the following Network OS manuals:

- [“NOS Administrator’s Guide”](#) on page 1.
- [“NOS CLI Command Reference”](#) on page 5.
- [“Network OS Message Reference”](#) on page 23.

Supported hardware and software

This document includes updated information specific to Network OS v2.1.x. The following hardware platforms are supported in this release:

- Brocade VDX 6710
- Brocade VDX 6720
- Brocade VDX 6730

Although many different software and hardware configurations are tested and supported by Brocade Communications Systems, Inc. for Network OS v2.1.x, documenting all possible configurations and scenarios is beyond the scope of this document.

To obtain information about an OS version other than Network OS v2.1.x, refer to the documentation specific to that OS version.

What's new in this document

This document has been updated for Network OS v2.1.2 with information on:

- restrict-flooding command
- vCenter discovery commands
- Added the new and modified messages in [Chapter 3, “Network OS Message Reference”](#).
- Revised description for the “[chassis fan airflow-direction](#)” command in [Chapter 2, “NOS CLI Command Reference”](#).

Document conventions

This section describes text formatting conventions and important notice formats used in this document.

Text formatting

The narrative-text formatting conventions that are used are as follows:

bold text	Identifies command names Identifies the names of user-manipulated GUI elements Identifies keywords and operands Identifies text to enter at the GUI or CLI
<i>italic text</i>	Provides emphasis Identifies variables Identifies paths and Internet addresses Identifies document titles
<code>code text</code>	Identifies CLI output Identifies command syntax examples

For readability, command names in the narrative portions of this guide are presented in mixed lettercase: for example, **switchShow**. In actual examples, command lettercase is often all lowercase. Otherwise, this manual specifically notes those cases in which a command is case sensitive.

Command syntax conventions

Command syntax in this manual follows these conventions:

command	Commands are printed in bold.
--option, option	Command options are printed in bold.
-argument, arg	Arguments.
[]	Optional element.
<i>variable</i>	Variables are printed in italics. In the help pages, values are <u>underlined</u> or enclosed in angled brackets < >.

...	Repeat the previous element, for example “member[;member...]”
value	Fixed values following arguments are printed in plain font. For example, --show WWN
	Boolean. Elements are exclusive. Example: --show -mode egress ingress

Notes, cautions, and warnings

The following notices and statements are used in this manual. They are listed below in order of increasing severity of potential hazards.

NOTE

A note provides a tip, guidance, or advice, emphasizes important information, or provides a reference to related information.

ATTENTION

An Attention statement indicates potential damage to hardware or data.



CAUTION

A Caution statement alerts you to situations that can be potentially hazardous to you or cause damage to hardware, firmware, software, or data.



DANGER

A Danger statement indicates conditions or situations that can be potentially lethal or extremely hazardous to you. Safety labels are also attached directly to products to warn of these conditions or situations.

Key terms

For definitions specific to Brocade and Fibre Channel, see the technical glossaries on MyBrocade. See “[Brocade resources](#)” on page viii for instructions on accessing MyBrocade.

For definitions of SAN-specific terms, visit the Storage Networking Industry Association online dictionary at:

<http://www.snia.org/education/dictionary>

Notice to the reader

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These references are made for informational purposes only.

Corporation	Referenced Trademarks and Products
Microsoft Corporation	Windows, Windows NT, Internet Explorer
Oracle Corporation	Oracle, Java
Red Hat, Inc.	Red Hat, Red Hat Network, Maximum RPM, Linux Undercover
IBM	BladeCenter Advanced Management Module Protect Mode

Additional information

This section lists additional Brocade and industry-specific documentation that you might find helpful.

Brocade resources

To get up-to-the-minute information, go to <http://my.brocade.com> and register at no cost for a user ID and password.

White papers, online demonstrations, and data sheets are available through the Brocade website at:

<http://www.brocade.com/products-solutions/products/index.page>

For additional Brocade documentation, visit the Brocade website:

<http://www.brocade.com>

Release notes are available on the MyBrocade website and are also bundled with the Network OS firmware.

Other industry resources

For additional resource information, visit the Technical Committee T11 website. This website provides interface standards for high-performance and mass storage applications for Fibre Channel, storage management, and other applications:

<http://www.t11.org>

For information about the Fibre Channel industry, visit the Fibre Channel Industry Association website:

<http://www.fibrechannel.org>

Getting technical help

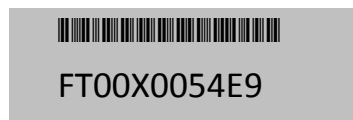
Contact your switch support supplier for hardware, firmware, and software support, including product repairs and part ordering. To expedite your call, have the following information available:

1. General Information

- Switch model
- Switch operating system version
- Software name and software version, if applicable
- Error numbers and messages received
- **supportSave** command output
- Detailed description of the problem, including the switch or fabric behavior immediately following the problem, and specific questions
- Description of any troubleshooting steps already performed and the results
- Serial console and Telnet session logs
- syslog message logs

2. Switch Serial Number

The switch serial number and corresponding bar code are provided on the serial number label, as illustrated below:



The serial number label is located as follows:

- *Brocade VDX 6720* — On the switch ID pull-out tab located on the bottom of the port side of the switch

3. World Wide Name (WWN)

Use the **licenseIdShow** command to display the WWN of the chassis.

If you cannot use the **licenseIdShow** command because the switch is inoperable, you can get the WWN from the same place as the serial number, except for the Brocade DCX. For the Brocade DCX, access the numbers on the WWN cards by removing the Brocade logo plate at the top of the nonport side of the chassis.

Document feedback

Quality is our first concern at Brocade and we have made every effort to ensure the accuracy and completeness of this document. However, if you find an error or an omission, or you think that a topic needs further development, we want to hear from you. Forward your feedback to:

documentation@brocade.com

Provide the title and version number of the document and as much detail as possible about your comment, including the topic heading and page number and your suggestions for improvement.

NOS Administrator's Guide

In this chapter

- [New Content for the NOS Administrator's Guide. 1](#)

New Content for the NOS Administrator's Guide

The updates in this chapter are for the *Network OS Administrator's Guide Supporting Network OS v2.1.1* (53-1002491-01), originally published in December 2011.

NOTE

The updates are arranged by the chapter names as they appear in the original document.

Chapter 6, Installing and Maintaining Firmware

Replace the section titled "Downloading firmware from a USB device" on page 56 with the following section.

Downloading firmware from a USB device

The Brocade VDX 6710, 6720, and 6730 switches support firmware download from a Brocade-branded USB device. Third-party USB devices are not supported. Before you can access the USB device, you must enable the device and mount it as a file system. The firmware images to be downloaded must be stored in the factory-configured firmware directory. Multiple images can be stored under this directory.

1. Ensure that the USB device is connected to the switch.
2. Enter the **usb on** command.

```
switch# usb on
Trying to enable USB device. Please wait...
USB storage enabled
```

3. *Optional:* Enter the **usb dir** command.

```
switch# usb dir
firmwarekey\ 0B 2010 Aug 15 15:13
support\ 106MB 2010 Aug 24 05:36
config\ 0B 2010 Aug 15 15:13
firmware\ 380MB 2010 Aug 15 15:13
      NOS_v2.1.1\ 379MB 2010 Aug 15 15:31
Available space on usbstorage 74%
```

4. Enter the **firmware download usb** command followed by the relative path to the firmware directory.

```
switch# firmware download usb directory firmware\NOS_v2.1.1
```

5. *Optional:* Unmount the USB storage device.

```
switch# usb off
Trying to disable USB device. Please wait...
USB storage disabled.
```

Chapter 8, Security

Add the following section after “TACACS+ server parameters” on page 86. This update only applies to Network OS v2.1.1b or higher:

TACACS+ service in a mixed vendor environment

Network OS v2.1.x supports Terminal Access Controller Access-Control System Plus (TACACS+) Authentication, Authorization and Accounting (AAA) services in multi vendor environments.

Network OS v2.1.x utilizes Role Based Access Control (RBAC) to authorize access to system objects by authenticated users. In AAA environments you may need to configure “authorization” across Brocade & non-Brocade platforms. You can use TACACS+ to provide centralized AAA services to multiple Network Access Servers (NAS) or clients.

Configuring optional arguments in tac_plus

In Network OS v2.1.1b, the Attribute-Value Pair (AVP) argument can be optional or mandatory, and is requested explicitly by the device running Network OS. In Network OS v2.1.1b, configure the argument as optional, as per the example below:

```
brcd-role*admin
```

To further enhance compatibility and interoperability with multiple TACACS+ services, the Network OS device sends the optional argument ‘brcd-role’ in the authorization request to the TACACS+ service. As most TACACS+ servers are coded so that if the NAS sends an argument (as mandatory or optional) in the authorization request, then the service sends the same argument in the response. So when brcd-role is configured as an optional argument, it is sent in the authorization request. Therefore Network OS users are able to successfully authorize with all TACACS+ services in a mixed vendor environment.

The open source TACACS+ server ‘tac_plus’ is hosted on <http://www.shrubbery.net>, and is based on the original Cisco version of TACACS+ server. In the example below, the mandatory attribute priv-lvl=15 is set to allow Cisco to authenticate. The optional brcd-role = admin argument allows VDX to authenticate with Network OS v2.1.1b.

NOTE

As tac_plus does not send optional arguments by default, optional arguments are only supported by Network OS v2.1.1b or higher.

To configure tac_plus with the optional attribute value pair for NOS, add these values to the tac_plus.conf file:

```
user = <username> {
    default service = permit
    service = exec {
        priv-lvl=15
    }
    optional brcd-role = admin
}
```

```

}
Or
group = <usergroup> {
    default service = permit
    service = exec {
        priv-lvl=15
        optional brcd-role = admin
    }
}

user = <username> {
    Member = <usergroup>
}

```

Add the following note to the section “Adding a RADIUS server” on page 87:

NOTE

The maximum supported length for the RADIUS hostname is 40 characters.

Add the following note to the section “Changing a RADIUS server” on page 87:

NOTE

The maximum supported length for the RADIUS hostname is 40 characters.

Add the following note to the section “Adding a TACACS+ server” on page 87:

NOTE

The maximum supported length for the TACACS+ hostname is 40 characters.

Add the following note to the section “Changing a TACACS+ server” on page 87:

NOTE

The maximum supported length for the TACACS+ hostname is 40 characters.

Chapter 9, FIPS Support

Add the following note to the section “Setting up LDAP for FIPS-compliant state” on page 110:

NOTE

The maximum supported length for the LDAP hostname is 40 characters.

Chapter 15, Configuration Management

Update the section “Setting interface parameters on a port” on page 176 to read as follows:

Perform this procedure for every port you want to be monitored by ELD.

1. Log in to any switch in a Brocade VCS Fabric cluster.
2. In the global configuration mode, enter the **interface** command to select the RBridge/slot/port for which you want to enable edge-loop detection.
3. In the interface configuration mode, enter the **edge-loop-detection vlan** command to specify the VLAN you want ELD to monitor on this port.
If you do not specify a VLAN, the command fails.
4. *Optional:* Enter the **edge-loop-detection port-priority** command to specify the ELD port priority of the specified port for the selected VLAN. Enabling switching is not mandatory when assigning a port-priority.

Example

This example sets the ELD port priority on two port/VLAN pairs: port 1/0/7 VLAN 10 and port 4/0/6 VLAN 10. If both these ports are detected in the same loop, ELD shuts down port 4/0/6 when the pdu-rx-limit for the Brocade VCS Fabric cluster is reached. Port 4/0/6 is chosen for shut down because it has been assigned the lower priority (higher number) then port 1/0/7.

```
(config)# interface TenGigabitEthernet 1/0/7
(conf-if-te-1/0/7)# edge-loop-detection vlan 10
(conf-if-te-1/0/7)# edge-loop-detection port-priority 5
(conf-if-te-1/0/7)# top
(config)# interface TenGigabitEthernet 4/0/6
(conf-if-te-1/0/7)# edge-loop-detection vlan 10
(conf-if-te-1/0/7)# edge-loop-detection port-priority 7
```

Chapter 23, Configuring LLDP

Delete the section titled “DCBX interaction with other vendor devices” on page 274.

NOS CLI Command Reference

In this chapter

- [New commands in the Network OS Command Reference](#) 5
- [Modified commands in Network OS Command Reference](#) 10
- [Deleted commands in Network OS Command Reference](#) 22

New commands in the Network OS Command Reference

Add the following new commands to the *Network OS Command Reference Supporting Network OS v2.1.1* (53-1002492-01), originally published in December 2011.

chassis fan airflow-direction

Specifies the direction of airflow through the chassis based on physical PSU and fans.

Synopsis **chassis fan airflow-direction** [**port-side-intake** | **port-side-exhaust**]

Operands **port-side-intake** Specifies the airflow to enter the switch.
 port-side-exhaust Specifies the airflow to exit the switch.

Defaults None

Command Mode Privileged EXEC mode

Description Use this command to configure the fan airflow direction to match the physical PSU and fans installed in the system.

Usage Guidelines This command must only be used after you purchase and install the appropriate fan/power supply that provides the desired airflow direction in the switch. Please contact your Brocade Sales Representative to obtain the correct part numbers and pricing.

When the **chassis fan airflow-direction** command is issued, the switch will not recognize the configuration change until the switch is rebooted.

Only one (1) configuration change is accepted per reboot. This means that even if this command is entered multiple times, only the first configuration change entered will be effective after rebooting.

The switch serial number is registered with Brocade and the information recorded in the Brocade database about that switch includes the airflow orientation at the time of shipment.

Any subsequent change in airflow direction is not recorded in the Brocade database. This means that if you request a Return Merchandise Authentication (RMA) for the switch, the replacement switch will be sent with the original orientation.

Examples To specify the fan airflow-direction:

```
switch# chassis fan airflow-direction port-side-exhaust  
Previous configuration : port-side-intake  
Current configuration  : port-side-exhaust  
System fan airflow-direction changes will be effective after reboot!!
```

See Also None

restrict-flooding

Restricts the system-wide egress flooding behavior on port-profile ports.

Synopsis	restrict-flooding
	no restrict-flooding
Operands	None
Defaults	By default, this feature is disabled.
Command Modes	Port-profile mode
Description	This command allows you to restrict the system-wide egress flooding behavior on port-profile ports. After entering this command, only egress traffic for the associated port-profiles on that port will be allowed.
Usage Guidelines	<p>Use the no restrict-flooding command to disable this functionality.</p> <p>This command functions with Network OS v2.1.2.</p>
Examples	<p>To allow non-profiled macs:</p> <pre>switch(config)# port-profile default switch(config-port-profile-default)# restrict-flooding</pre>
See Also	None

vcenter discovery ignore-delete-all-response

Configures a mode to ignore the “delete-all” responses from vCenter.

Synopsis	vcenter <i>vcenter-name</i> discovery ignore-delete-all-response { <i>number</i> always }	
Operands	<i>vcenter-name</i>	The name of the vCenter.
	<i>number</i>	Number of Discovery Cycles to ignore. The range of valid values is from 1 through 9999 cycles.
	always	Always ignore delete-all responses from vCenter.
Defaults	By default, this feature is disabled.	
Command Modes	Global configuration mode	
Description	This command configures a mode that ignores responses from vCenter that request to delete all auto-port-profiles, which may be received due to an invalid condition or state in the vCenter server.	
Usage Guidelines	This command functions with Network OS v2.1.2.	
Examples	None	
See Also	vcenter discovery timeout	

vcenter discovery timeout

Configures the timeout for the response from vCenter server.

Synopsis	vcenter <i>vcenter-name</i> discovery timeout <i>number</i>	
Operands	<i>vcenter-name</i>	The name of the vCenter.
	<i>number</i>	Discovery timeout in minutes. The range of valid values is from 1 through 180 minutes.
Defaults	The default value is 60 minutes.	
Command Modes	Global configuration mode	
Description	This command configures the timeout for the response from vCenter server during the polling attempts.	
Usage Guidelines	This command functions with Network OS v2.1.2.	
Examples	None	
See Also	vcenter discovery ignore-delete-all-response	

Modified commands in Network OS Command Reference

Modify the following commands in the *Network OS Command Reference Supporting Network OS v2.1.1* (53-1002492-01), originally published in December 2011.

dpod

Manages Dynamic Ports on Demand (POD) assignments.

Synopsis	dpod <i>rbridge-id/slot/port</i> { reserve release }	
Operands	<i>rbridge-id</i>	Specifies a switch by its RBridge identifier.
	<i>slot</i>	Specifies the slot number.
	<i>port</i>	Specifies the port number.
	reserve	Reserves a POD assignment for a port that is currently not able to come online but is expected to be viable in the future. A port license assignment that is reserved will be associated with the first port set that has a vacancy.
	release	Removes a port from the port set to which it is currently assigned.
Defaults	This command has no default values.	
Command Modes	Global configuration mode.	
Description	Use this command to manage Dynamic POD assignments.	
	A port POD assignment can only be released if the port is currently offline. Use the shutdown command to take the port offline.	
Usage Guidelines	Do not release a port unless you plan to disconnect the optical link or disable the port persistently. If the link (server or optical) is left in a state where the port could be brought online, the Dynamic POD mechanism will detect this unassigned port and attempt to reassign it to a port set.	
	This command has no effect on a Brocade 6710. The VDX 6710 does not require POD licenses.	
	The Brocade VDX 8700 does not support Dynamic PODs.	
Examples	To reserve a POD assignment on RBridge 5 of a Brocade VCS Fabric cluster:	
	<pre>switch(config)# dpod 5/0/10 reserve switch(config-dpod-5/0/10)# exit switch(config)# dpod 5/0/11 reserve switch0(config-dpod-5/0/11)# exit</pre>	
	To remove a port from a POD port set:	
	<pre>switch(config)# dpod 5/0/10 release switch(config-dpod-5/0/10)# exit switch(config)# dpod 5/0/11 release switch(config-dpod-5/0/11)# exit</pre>	
See Also	None	

ldap-server host

Configures an LDAP-server host.

Synopsis	ldap-server host { <i>ipaddr</i> <i>FQDN</i> } [port <i>portnum</i>] [basedn <i>basedn</i>] [timeout <i>secs</i>] [retries <i>num</i>] no ldap-server host { <i>ipaddr</i> <i>FQDN</i> }	
Operands	host <i>ipaddr</i>	Specifies the destination IP address.
	host <i>FQDN</i>	Specifies the destination hostname. The maximum supported length is 40 characters.
	port <i>portnum</i>	TCP Port for Authentication.
	domain <i>basedn</i>	Describes the base domain name of the host. The maximum supported length is 40 characters.
	timeout <i>secs</i>	Wait time for this server to respond.
	retries <i>num</i>	Number of retries for this server connection.
Defaults	The default timeout is five seconds. The default port is 389. The default number of retries is five.	
Command Modes	Global configuration mode	
Description	This commands sets up a connection to the LDAP-server host, or modifies an existing configuration.	
Usage Guidelines	Use the no version of this command to delete an LDAP server.	
	The maximum supported length for the AAA LDAP hostname is 40 characters.	
Examples	Example of adding an LDAP server on port 3890 with retries set to three.	
	<pre>switch(config)# ldap-server host 10.24.65.6 basedn sec.brocade.com port 3890 retries 3</pre>	
See Also	None	

lldp dcbx-version

Specifies which version of the Data Center Bridging Exchange (DCBX) protocol to use.

Synopsis	lldp dcbx-version {auto cee}	
Operands	auto	Specifies to auto adjust the DCBX protocol version to accommodate the difference when a switch interacts with different vendors using a different version of the DCBX protocol.
	cee	Specifies to use the Converged Enhanced Ethernet (CEE) DCBX version.
Defaults	The default is auto.	
Command Modes	Interface configuration mode	
Description	Use this command to specify which version of the DCBX protocol to use.	
Usage Guidelines	None	
Examples	To specify which DCBX version to use:	
	<pre>switch(conf-if-te-0/1)# lldp dcbx-version cee</pre>	
See Also	None	

qos flowcontrol

Activates and configures QoS flow control.

Synopsis	qos flowcontrol tx [on off] rx [on off] no qos flowcontrol																
Operands	tx [on off] Activates or deactivates the transmission portion of flow control. rx [on off] Activates the receiving portion of flow control.																
Defaults	None																
Command Modes	Interface configuration mode																
Description	<p>This command configures and activates QoS flow control.</p> <p>When a 1Gbps local port is already online, and the qos flowcontrol command is issued, the pause settings take effect immediately on that local port. However, when the link is toggled, pause is re-negotiated. The local port will advertise the most recent qos flowcontrol settings. After auto completes, the local port pause settings may change, depending on the outcome of the pause negotiation, per 802.3 Clause 28B, as shown in Table 1.</p>																
	TABLE 1 Pause negotiation results																
	<table> <tr> <th>Advertised LOCAL cfg</th><th>Advertised REMOTE cfg</th><th>Negotiated result</th></tr> <tr> <td>Rx=off Tx=on</td><td>Rx=on Tx=on</td><td>asymmetrical: LOCAL Tx=on --> pause --> REMOTE Rx=on</td></tr> <tr> <td>Rx=on Tx=on</td><td>Rx=off Tx=on</td><td>asymmetrical: LOCAL Rx=on <-- pause <-- REMOTE Tx=on</td></tr> <tr> <td>Rx=on Tx=n/a</td><td>Rx=on Tx=n/a</td><td>symmetrical : LOCAL Tx/Rx=on <-- pause --> REMOTE Tx/Rx=on</td></tr> <tr> <td>Rx=n/a Tx=n/a</td><td>Rx=off Tx=off</td><td>disable pause both sides</td></tr> </table>		Advertised LOCAL cfg	Advertised REMOTE cfg	Negotiated result	Rx=off Tx=on	Rx=on Tx=on	asymmetrical: LOCAL Tx=on --> pause --> REMOTE Rx=on	Rx=on Tx=on	Rx=off Tx=on	asymmetrical: LOCAL Rx=on <-- pause <-- REMOTE Tx=on	Rx=on Tx=n/a	Rx=on Tx=n/a	symmetrical : LOCAL Tx/Rx=on <-- pause --> REMOTE Tx/Rx=on	Rx=n/a Tx=n/a	Rx=off Tx=off	disable pause both sides
Advertised LOCAL cfg	Advertised REMOTE cfg	Negotiated result															
Rx=off Tx=on	Rx=on Tx=on	asymmetrical: LOCAL Tx=on --> pause --> REMOTE Rx=on															
Rx=on Tx=on	Rx=off Tx=on	asymmetrical: LOCAL Rx=on <-- pause <-- REMOTE Tx=on															
Rx=on Tx=n/a	Rx=on Tx=n/a	symmetrical : LOCAL Tx/Rx=on <-- pause --> REMOTE Tx/Rx=on															
Rx=n/a Tx=n/a	Rx=off Tx=off	disable pause both sides															
Usage Guidelines	None																
Examples	None																
See Also	None																

radius-server

Applies attributes to the RADIUS server.

Synopsis **radius-server** **host** *ip-address* | *hostname* **auth-port** *portnum* **protocol** *chap* | *pap* | *ms-chap-peap*
key *shared_secret_string* **timeout** *sec* **retransmit** *num*

no radius-server **host** *hostname* | *ip-address*

Operands	host	Identifies the RADIUS server by host name or IP address.
	<i>hostname</i>	Specifies the host name of the RADIUS server. The maximum supported length for the AAA RADIUS hostname is 40 characters.
	<i>ip-address</i>	Specifies the IP address of the RADIUS server. IPv4 and IPv6 are supported.
	auth-port	The authentication port.
	<i>port</i>	Specifies the UDP port used to connect the RADIUS server for authentication. The default is 1812.
	protocol	The authentication protocol to be used.
	<i>chap</i> <i>pap</i> <i>ms-chap-peap</i>	Specifies the authentication protocol. Options include CHAP, PAP, PEAP-MSCHAP. The default is CHAP.
	key	The shared secret between the switch and the RADIUS server.
	<i>shared-secret-string</i>	The text string that is used as the shared secret between the switch and the RADIUS server. The default is sharedsecret . The exclamation mark (!) is supported by in the radius/tacacs+ and you can specify the password in either double quotes or the escape character (\), for example " secret!key " or secret\!key .
	timeout	The time to wait for the RADIUS server to respond.
	<i>sec</i>	Specifies the timeout value, in seconds. The default is 5 seconds.
	retransmit	The number of times the switch tries to connect to a RADIUS server.
	<i>num</i>	Specifies the number of tries to connect to a RADIUS server. The default is 5 attempts.

Defaults The following are the default values of the global settings

- **host**—There is no default for the host:
- **auth-port**—UDP port 1812
- **timeout**—5 seconds
- **retransmit**—5 attempts
- **key**—sharedsecret
- **protocol**—CHAP

Command Modes Global configuration mode

Description	Use this command to configure attributes on the RADIUS server. If the RADIUS server doesn't exist, it is added. If the RADIUS server already exists, then the attributes are changed.
Usage Guidelines	Using the no form of the radius-server command sets the default values of the individual attributes.
Examples	<p>Example of adding a RADIUS server:</p> <pre>switch(config)# radius-server host 10.24.65.6 protocol chap retransmit 100 switch(config-radius-server-10.24.65.6)# switch(config)# radius-server host 10.38.37.180 protocol pap key "new#virgo*secret" timeout 10</pre>
See Also	None

show dpod

Displays Dynamic Ports on Demand (POD) license information.

Synopsis	show dpod [<i>rbridge-id</i> all]
Operands	<i>rbridge-id</i> Executes the command on the remote switch specified by the RBridge ID. all Executes the command on all switches in the cluster.
Defaults	Executes the command on the local switch.
Command Modes	Privileged EXEC mode
Description	Use this command to display Dynamic POD license information for the local switch.
Usage Guidelines	The Brocade VDX 6710 and the Brocade VDX 8700 do not support Dynamic PODs.
Examples	<p>To display Dynamic POD assignment information:</p> <pre> switch# show dpod all The cluster has 2 switches rbridge-id: 1 24 ports are available in this switch 1 POD license is installed Dynamic POD method is in use 24 port assignments are provisioned for use in this switch: 16 port assignments are provisioned by the base switch license 8 port assignments are provisioned by the first POD license * 0 more assignments are added if the second POD license is installed 21 ports are assigned to installed licenses: 16 ports are assigned to the base switch license 5 ports are assigned to the first POD license Ports assigned to the base switch license: Te 1/0/1, Te 1/0/10, Te 1/0/11, Te 1/0/12, Te 1/0/13, Te 1/0/14, Te 1/0/15, Te 1/0/16, Te 1/0/17, Te 1/0/18, Te 1/0/19, Te 1/0/20, Te 1/0/21, Te 1/0/22, Te 1/0/23, Te 1/0/24 Ports assigned to the first POD license: Te 1/0/5, Te 1/0/6, Te 1/0/7, Te 1/0/8, Te 1/0/9 Ports assigned to the second POD license: None Ports not assigned to a license: Te 1/0/2, Te 1/0/3, Te 1/0/4 3 license reservations are still available for use by unassigned ports rbridge-id: 2 (output truncated) </pre>

See Also [dpod](#)

show lldp neighbors

Displays LLDP information for all neighboring devices on the specified interface.

Synopsis	show lldp neighbors [interface { tengigabitethernet <i>rbridge-id/slot/port</i> gigabitethernet <i>rbridge-id/slot/port</i> } detail]	
Operands	interface	Use this keyword to specify an Ethernet interface using the following operands:
	tengigabitethernet	Specifies a valid 10 Gbps Ethernet interface.
	<i>rbridge-id</i>	Specifies a switch by its RBridge identifier.
	<i>slot</i>	Specifies a valid slot number.
	<i>port</i>	Specifies a valid port number.
	gigabitethernet	Specifies a valid 1 Gbps Ethernet interface.
	<i>rbridge-id</i>	Specifies a switch by its RBridge identifier.
	<i>slot</i>	Specifies a valid slot number.
	<i>port</i>	Specifies a valid port number.
	detail	Displays all the LLDP neighbor information in detail for the specified interface.
Defaults	None	
Command Modes	Privileged EXEC mode	
Description	Use this command to display LLDP information for all neighboring devices on the specified interface. If you do not use the interface operand, only the mandatory TLVs are displayed.	
Usage Guidelines	The gigabitethernet <i>rbridge-id/slot/port</i> operand is used only on the Brocade VDX 6710.	
Examples	<p>To display detailed LLDP neighbor information on a specific interface:</p> <pre>switch# show lldp neighbors interface tengigabitethernet 3/0/8 detail</pre> <p>Neighbors for Interface Te 3/0/8</p> <pre>MANDATORY TLVs ===== Local Interface: Te 0/8 Remote Interface: Te 3/0/8 (IF Name) Dead Interval: 120 secs Remaining Life : 100 secs Tx: 536 Rx: 535 Chassis ID: 0005.1e76.1020 (MAC) Remote Mac: 0005.1e76.102c OPTIONAL TLVs ===== Port Interface Description: Te 3/0/8 System Name: sw0</pre>	

show lldp neighbors

```
System Description: Fibre Channel Switch.  
System Capabilities: Switching Routing  
System Capabilities Enabled: Switching  
  
Link Prim: 257  
Remote Protocols Advertised: Multiple Spanning Tree Protocol  
Remote VLANs Configured: VLAN ID: 1 VLAN Name: default  
AutoNego Support: Supported Not Enabled  
AutoNego Capability: 0  
Operational MAU Type: 0  
Link Aggregation Capability: Capable  
Link Aggregation Status: Disabled  
Port Vlan Id: 1  
Port & Protocol Vlan Flag: Supported Not enabled  
Port & Protocol Vlan Id: 0  
Link Aggregation Port Id: 0  
Max Frame Size: 2500  
Management Address: 10.32.152.21 (IPv4)  
Interface Numbering: 2  
Interface Number: 0x4080100 (67633408)  
OID: 0x100f99b4
```

See Also None

tacacs-server

Applies attributes to the TACACS+ server.

Synopsis	tacacs-server host <i>hostname</i> [ip-address [port <i>portnum</i>] [protocol <i>chap</i> <i>pap</i>] [key <i>shared_secret_key</i>] [timeout <i>secs</i>] [retries <i>num</i>] no tacacs-server <i>hostname</i> <i>ip-address</i>	
Operands	host	Identifies the TACACS+ server by host name or IP address.
	<i>hostname</i>	Specifies the domain name of the TACACS+ server. The maximum supported length for the TACACS+ hostname is 40 characters.
	<i>ip-address</i>	Specifies the IP address of the TACACS+ server. Only IPv4 is supported.
	port	The authentication port.
	<i>portnum</i>	Specifies the TCP port used to connect the TACACS+ server for authentication. The default is 49.
	protocol	The authentication protocol to be used.
	<i>chap</i> <i>pap</i>	Specifies the authentication protocol. Options include CHAP and PAP. The default is CHAP.
	key	The shared secret between the switch and the TACACS+ server.
	<i>shared_secret_key</i>	The text string that is used as the shared secret between the switch and the TACACS+ server to make the message exchange secure. The default is <i>sharedsecret</i> . The exclamation mark (!) is supported by in the radius/tacacs+ and you can specify the password in either double quotes or the escape character (\), for example " secret!key " or secret\key .
	timeout	The time to wait for the TACACS+ server to respond.
	<i>secs</i>	Specifies the timeout value, in seconds. The default is 5 seconds.
	retries	The number of times the switch tries to connect to a TACACS+ server.
	<i>num</i>	Specifies the number of tries to connect to a TACACS+ server. The default is 5 attempts.
Defaults	Following are the default values of the global settings: <ul style="list-style-type: none"> • host—There is no default for the host. • port—TCP port 49 • protocol—CHAP • key—sharedsecret • timeout—5 • retries—5 	
Command Modes	Global configuration mode	
Description	Use this command to configure attributes on the TACACS+ server.	

Usage Guidelines Using the **no** form of the **tacacs-server** command sets the default values of the individual attributes.

Examples The following example adds a TACACS+ server:

```
switch(config)# tacacs-server host 10.24.65.6 protocol chap retries 100
switch (config-tacacs-server-10.24.65.6)#
switch(config)# tacacs-server host 10.38.37.180 protocol chap
key "new#hercules*secret"
```

The following example changes the TACACS+ server:

```
switch(config)# tacacs-server host 10.xx.xx.xxx
switch(config-host-10.xx.xx.xxx)# key "changedsec"
```

The following example deletes the TACACS+ server:

```
switch(config)# no tacacs-server host 10.xx.xx.xxx
switch(config)# exit
switch# show running-config tacacs-server host
switch# show running-config tacacs-server host 10.xx.xx.xxx
tacacs-server host 10.xx.xx.xxx
key changedsec
```

See Also [tacacs-server](#)

usb dir

Lists the contents of an attached USB device.

Synopsis **usb dir** [**rbridge-id** *rbridge-id*]

Operands **rbridge-id** *rbridge-id* Executes the command on a switch specified by its Rbridge ID.

Defaults This command is executed on the local switch.

Command Modes Privileged EXEC mode

Description Use this command to list the contents of an attached USB device.

Usage Guidelines The USB device must be enabled before this function is available.

Examples To list the contents of the USB device attached to the local switch:

```
switch# usb dir
firmwarekey\ 0B 2010 Aug 15 15:13
support\ 106MB 2010 Aug 24 05:36
config\ 0B 2010 Aug 15 15:13
firmware\ 380MB 2010 Aug 15 15:13
      NOS_v2.1.1\ 379MB 2010 Aug 15 15:31
Available space on usbstorage 74%
```

See Also None

Deleted commands in Network OS Command Reference

Delete the following commands in the *Network OS Command Reference Supporting Network OS v2.1.1* (53-1002492-01), originally published in December 2011:

- **vepa enable**

Network OS Message Reference

In this chapter

Update and replace the chapters as described in the following sections:

- [New messages](#) 23
- [Modified messages](#) 27

New Content for the Network OS Message Reference

The updates in this chapter are for the *Network OS Message Reference supporting Network OS v2.1.1* (53-1002489-01), originally published in December 2011. These updates only apply to Network OS v2.1.2 or higher.

NOTE

The updates are arranged by the chapter names as they appear in the original document.

New messages

EM System Messages

Add the following messages to the chapter *EM System Messages* on page 45.

EM-1023

Message	<timestamp>, [EM-1023], <sequence-number>,, INFO, <system-name>, Chassis fan airflow-direction- <fan-direction> change is failed.
Probable Cause	Indicates failure to change the fan airflow direction.
Recommended Action	No action is required.
Severity	INFO

EM-1024

Message	<timestamp>, [EM-1024], <sequence-number>,, INFO, <system-name>, Platform is not supported for changing the fan-airflow direction.
----------------	--

Probable Cause	Indicates that the platform is not supported for changing the configuration.
Recommended Action	No action is required.
Severity	INFO

FW System Messages

Add the following message to the chapter *FW System Messages* on page 72.

FW-1409

Message	<timestamp>, [FW-1409], <sequence-number>,, WARNING, <system-name>, Current disk utilization is <Value> <Unit>. Deleting <File>.
Probable Cause	Indicates high compact flash (CF) disk utilization.
Recommended Action	No action is required.
Severity	WARNING

PORT System Messages

Add the following messages to the chapter *PORT System Messages* on page 126.

PORT-1014

Message	<timestamp>, [PORT-1014], <sequence-number>,, INFO, <system-name>, Interface fibrechannel <rbridge-id number>/<slot number>/<port number> is online.
Probable Cause	Indicates that the interface is online after the protocol dependencies are resolved.
Recommended Action	No action is required.
Severity	INFO

PORT-1015

Message	<timestamp>, [PORT-1015], <sequence-number>,, INFO, <system-name>, Interface fibrechannel <rbridge-id number>/<slot number>/<port number> is link down.
Probable Cause	Indicates that the fibre channel interface is offline because the link is down.
Recommended Action	Check whether the connectivity is proper and the remote link is up.

Severity INFO

PORT-1016

Message <timestamp>, [PORT-1016], <sequence-number>,, INFO, <system-name>, Interface fibrechannel <rbridge-id number>/<slot number>/<port number> is administratively up.

Probable Cause Indicates that the administrative status of the fibre channel interface has changed to up.

Recommended Action No action is required.

Severity INFO

PORT-1017

Message <timestamp>, [PORT-1017], <sequence-number>,, INFO, <system-name>, Interface fibrechannel <rbridge-id number>/<slot number>/<port number> is administratively down.

Probable Cause Indicates that the interface administrative status has changed to down.

Recommended Action No action is required.

Severity INFO

VC System Messages

Add the following messages to the chapter *VC System Messages* on page 188.

VC-1007

Message <timestamp>, [VC-1007], <sequence-number>,, INFO, <system-name>, vCenter <vCenterName>: ignore-delete-all-response has been changed to <ignore_count> cycles.

Probable Cause Indicates that the vCenter ignore invalid discovery cycle count has been changed.

Recommended Action No action is required.

Severity INFO

VC-1008

Message <timestamp>, [VC-1008], <sequence-number>,, WARNING, <system-name>, Ignoring no data from vCenter <url> - cycle: <ignore_count>.

Probable Cause Indicates the cycle for which no data received from vCenter has been ignored.

Recommended Action No action is required.

Severity WARNING

VC-1009

Message <timestamp>, [VC-1009], <sequence-number>,, WARNING, <system-name>, No data received from vCenter <url>, proceeding with discovery after specified <ignore_count> cycles.

Probable Cause Indicates proceeding with discovery even after receiving invalid data from vCenter.

Recommended Action No action is required.

Severity WARNING

VC-1010

Message <timestamp>, [VC-1010], <sequence-number>,, INFO, <system-name>, vCenter <vCenterName> : ignore-delete-all-response value has been changed to ALWAYS.

Probable Cause Indicates that the vCenter ignore invalid discovery cycle count has been changed to 'always'.

Recommended Action No action is required.

Severity INFO

VC-1011

Message <timestamp>, [VC-1011], <sequence-number>,, WARNING, <system-name>, vCenter %s : ignoring invalid discovery - ALWAYS.

Probable Cause Indicates the cycle for which there was an invalid discovery has been ignored.

Recommended Action No action is required.

Severity WARNING

VC-1012

Message <timestamp>, [VC-1012], <sequence-number>,, INFO, <system-name>, vCenter <vCenterName> discovery timeout has been changed to <timeout> minutes.

Probable Cause	Indicates that the vCenter discovery timeout duration has been changed.
Recommended Action	No action is required.
Severity	INFO

Modified messages

Replace the following message in the chapter *FCOE System Messages* on page 60.

FCOE-1034

Message	<code><timestamp>, [FCOE-1034], <sequence-number>,, WARNING, <switch-name>, FIP/FCoE frame on priority <pkt_ctrlp->pri_in> for <Name of the following string> <MAC address or WWN of the source device> on interface <Rbridge-id>/<Slot>/<Port> discarded because PFC/FCoE not enabled on this priority.</code>
Probable Cause	Indicates that the priority is not PFC or FCoE enabled.
Recommended Action	Configure as required.
Severity	WARNING

Brocade VDX 6710-54 Hardware Reference Manual

In this chapter

The updates in this chapter are for the Brocade VDX 6710-54 Hardware Reference Manual, part number: 53-10002390-04, published March 2012.

- [Chapter 4, Brocade VDX 6710-54 Operation](#) 29
- [Chapter 5, FRU Removal and Replacement Procedures](#) 29

Chapter 4, Brocade VDX 6710-54 Operation

Under the heading “Brocade VDX 6710-54 management” on page 29, replace Table 5 with the following information.

TABLE 5 Management options for the Brocade VDX 6710-54

Management tool	Out-of-band support	In-band support
Command line interface (CLI) Up to two admin sessions and four user sessions simultaneously. For more information, refer to the <i>Network OS Administrator's Guide</i> and the <i>Brocade Network OS Command Reference</i> .	Ethernet or serial (console port) connection	In standalone mode only. Not available in VCS mode.
Standard SNMP applications For information, refer to the <i>Network OS Administrator's Guide</i> and the <i>Brocade Network OS MIB Reference</i> .	Ethernet or serial (console port) connection	N/A
Brocade Network Advisor For information, refer to the <i>Brocade Network Advisor SAN+IP User Manual</i> .	Ethernet (preferred) or serial (console port) connection	N/A

Chapter 5, FRU Removal and Replacement Procedures

Under the heading “Replacing the power supply and fan assembly” on page 36, add a step after step 5 and before the paragraph that says “You can display the power supply and fan assembly status using the following commands from the CLI:”

Step 6. If you have changed the airflow direction in the chassis by installing two FRUs with a new airflow direction, you must run the command **chassis fan airflow-direction [port-side-direction]**, where the [port-side-direction] operands are either **port-side-intake** or **port-side-exhaust**, depending on which direction the airflow is directed.

```
switch# chassis fan airflow-direction port-side-exhaust
Previous configuration : port-side-intake
Current configuration : port-side-exhaust
System fan airflow-direction changes will be effective after reboot!!
```

Switch#

Brocade VDX 6720 Hardware Reference Manual

In this chapter

The updates in this chapter are for the VDX Hardware Reference Manual, part number: 53-10002084-04, published March 2012.

- [Chapter 4, Brocade VDX 6720 Operation](#) 31
- [Chapter 5, FRU Removal and Replacement Procedures](#) 31

Chapter 4, Brocade VDX 6720 Operation

Under the heading “Brocade VDX 6720 management” on page 33, replace Table 5 with the following information.

TABLE 5 Management options for the Brocade VDX 6720

Management tool	Out-of-band support	In-band support
Command line interface (CLI) Up to two admin sessions and four user sessions simultaneously. For more information, refer to the <i>Network OS Administrator's Guide</i> and the <i>Brocade Network OS Command Reference</i> .	Ethernet or serial (console port) connection	In standalone mode only. Not available in VCS mode.
Standard SNMP applications For information, refer to the <i>Network OS Administrator's Guide</i> and the <i>Brocade Network OS MIB Reference</i> .	Ethernet or serial (console port) connection	N/A
Brocade Network Advisor For information, refer to the <i>Brocade Network Advisor SAN+IP User Manual</i> .	Ethernet (preferred) or serial (console port) connection	N/A

Chapter 5, FRU Removal and Replacement Procedures

Under the heading “Replacing the power supply and fan assembly” on page 40, add a step after step 5 and before the paragraph that says “You can display the power supply and fan assembly status using the following commands from the CLI:”

Step 6. If you have changed the airflow direction in the chassis by installing two FRUs with a new airflow direction, you must run the command **chassis fan airflow-direction [port-side-direction]**, where the [port-side-direction] operands are either **port-side-intake** or **port-side-exhaust**, depending on which direction the airflow is directed.

```
switch# chassis fan airflow-direction port-side-exhaust
Previous configuration : port-side-intake
Current configuration  : port-side-exhaust
System fan airflow-direction changes will be effective after reboot!!
```

Switch#

ATTENTION

Be sure that all combined FRUs in the chassis have the same airflow direction.

Under the heading “Replacing a Brocade 6720-60 fan assembly” on page 46, add a step after step 5 and before the paragraph that says “You can enter one of the following commands at the command line prompt to display fan status:”

Step 6. If you have changed the airflow direction in the chassis by installing three FRUs with a new airflow direction, you must run the command **chassis fan airflow-direction** *[port-side-direction]*, where the *[port-side-direction]* operands are either **port-side-intake** or **port-side-exhaust**, depending on which direction the airflow is directed.

```
switch# chassis fan airflow-direction port-side-exhaust
Previous configuration : port-side-intake
Current configuration  : port-side-exhaust
System fan airflow-direction changes will be effective after reboot!!
Switch#
```

ATTENTION

Be sure that all fan assemblies in the chassis have the same airflow direction.

Brocade VDX 6730 Hardware Reference Manual

In this chapter

The updates in this chapter are for the Brocade VDX 6730 Hardware Reference Manual, part number: 53-10002389-04, published March 2012.

- [Chapter 4, Brocade VDX 6730 Operation](#) 33
- [Chapter 5, FRU Removal and Replacement Procedures](#) 33

Chapter 4, Brocade VDX 6730 Operation

Under the heading “Brocade VDX 6730 management” on page 34, replace Table 5 with the following information.

TABLE 5 Management options for the Brocade VDX 6730

Management tool	Out-of-band support	In-band support
Command line interface (CLI) Up to two admin sessions and four user sessions simultaneously. For more information, refer to the <i>Network OS Administrator's Guide</i> and the <i>Brocade Network OS Command Reference</i> .	Ethernet or serial (console port) connection	In standalone mode only. Not available in VCS mode.
Standard SNMP applications For information, refer to the <i>Network OS Administrator's Guide</i> and the <i>Brocade Network OS MIB Reference</i> .	Ethernet or serial (console port) connection	N/A
Brocade Network Advisor For information, refer to the <i>Brocade Network Advisor SAN+IP User Manual</i> .	Ethernet (preferred) or serial (console port) connection	N/A

Chapter 5, FRU Removal and Replacement Procedures

Under the heading “Replacing the power supply and fan assembly” on page 43, add a step after step 5 and before the paragraph that says “You can display the power supply and fan assembly status using the following commands from the CLI:”

- Step 6. If you have changed the airflow direction in the chassis by installing two FRUs with a new airflow direction, you must run the command **chassis fan airflow-direction [port-side-direction]**, where the [port-side-direction] operands are either **port-side-intake** or **port-side-exhaust**, depending on which direction the airflow is directed.

```
switch# chassis fan airflow-direction port-side-exhaust
Previous configuration : port-side-intake
Current configuration : port-side-exhaust
System fan airflow-direction changes will be effective after reboot!!
Switch#
```

ATTENTION

Be sure that all combined FRUs in the chassis have the same airflow direction.

Under the heading “Replacing the fan assembly” on page 48, add a step after step 5 and before the paragraph that says “You can enter one of the following commands at the command line prompt to display fan status:”

Step 6. If you have changed the airflow direction in the chassis by installing three FRUs with a new airflow direction, you must run the command **chassis fan airflow-direction** *[port-side-direction]*, where the *[port-side-direction]* operands are either **port-side-intake** or **port-side-exhaust**, depending on which direction the airflow is directed.

```
switch# chassis fan airflow-direction port-side-exhaust
Previous configuration : port-side-intake
Current configuration  : port-side-exhaust
System fan airflow-direction changes will be effective after reboot!!
Switch#
```

ATTENTION

Be sure that all fan assemblies in the chassis have the same airflow direction.
